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NOTES AND NEWS.

It is hoped that readers of the MONTHLY will cooperate in contributing to the general interest of this department by sending items to the Editor-in-Chief.

At Defiance College, O., Mr. E. H. VANCE was appointed professor of mathematics in January, 1921.

Professor EVA CHANDLER, of Wellesley College, retired in June, 1920, as professor emeritus. She was instructor of mathematics at Wellesley, 1879–1888; associate professor, 1888–1912; professor, 1912–1920.

Dr. GERTRUDE I. MCCAIN, professor of mathematics at Oxford College for Women, O., will teach at the summer school of Hunter College, New York City, in 1921.

Mr. R. L. WILDER, of Brown University, has been appointed instructor of mathematics at the University of Texas.

Mr. D. E. WHITFORD, of Brown University, has been appointed instructor of mathematics at the University of Rochester.

Instructor H. T. STETSON, of Harvard University, has been promoted to an assistant professorship.

Professor FRANK MORLEY, of the Johns Hopkins University, is now in England on leave of absence for the second semester of the current year.

At the University of Alberta, Dr. S. D. KILLAM, associate professor of applied mathematics, has been promoted to a full professorship, and Assistant Professor J. W. CAMPBELL (*1920*, 336, 498) has been promoted to an associate professorship.

W. F. PICKERING, assistant professor of astronomy and director of the Mandeville Station in Jamaica of the Harvard Astronomical Observatory, has been granted leave of absence for one year. He went first to England. Later he will probably study volcanic craters in the neighborhood of the Mediterranean Sea.

Miss RACHEL T. EASTERBROOKS, of Brown University, has been appointed instructor of mathematics and assistant in physics at Hood College, Frederick, Md.

Professor W. W. RANKIN, of the University of North Carolina, who has been on leave of absence for the last two years acting as instructor at Columbia University, has been appointed in charge of the department of mathematics at Agnes Scott College, Decatur, Ga.

Professor JOSEPH LIPKA, of Massachusetts Institute of Technology, is to spend the year 1921–1922 in Europe and Great Britain. He expects to work for some months with Professor LEVI-CIVITA in Rome.

At Union College, Mr. A. D. SNYDER of Lafayette College, Easton, Penn., and Mr. RALPH BENNETT have been appointed instructors of mathematics in place of Mr. COMSTOCK and Mr. TERWILLIGER (cf. *1921*, 234).

At Westminster College, New Wilmington, Pa., Associate Professor J. V. MCKELVEY of Iowa State College has been appointed professor of mathematics.

Associate Professor W. A. MANNING, of Stanford University, has been promoted to a professorship of mathematics.

Dr. M. C. FOSTER, of Yale University, has been made instructor of mathematics at the university.

The following appointments and promotions were made in the autumn of 1920:

At the Carnegie Institute of Technology, Pittsburgh, Mr. J. B. ROSENBACH, formerly of the University of Illinois, and Mr. C. H. KOHLER were appointed instructors of mathematics in the School of Science and Engineering. Mr. J. R. EVERETT, Dr. GEORGE HESS, and Mr. H. F. KOHL were appointed instructors of mathematics in the School of Applied Industry.

At the Georgia School of Technology, Atlanta, Ga., Mr. D. L. STAMY was promoted from an instructorship of mathematics to an assistant professorship. The following were appointed instructors of mathematics: Mr. W. W. ELLIOTT, Mr. P. L. ARMSTRONG, Mr. J. L. DRISCOLL, and Mr. L. H. HOLLER.

Miss IDA WHITAKER was appointed instructor of mathematics at the Municipal University of Akron, O.

At the Colorado School of Mines, Golden, Mr. G. W. GORRELL, formerly of DePauw University, was appointed professor of mathematics and Mr. W. R. HALE, formerly of Broadus College, was appointed assistant professor.

At Phillips University, East Enid, Okla., Mr. F. E. KNOWLES, formerly of the Oklahoma Agricultural College, was made professor of mathematics and physics. Mr. W. M. REEVES, formerly of Cotner College, was appointed associate professor of mathematics. Mr. A. J. HARGETT resigned to become professor of mathematics in Texas Christian University.

At Henry Kendall College, Tulsa, Okla., Dr. W. E. HOWARD was appointed in charge of the department of mathematics. Mr. O. S. DUFFENDICK, who had been in charge of the departments of mathematics and physics and who is during the present year on leave of absence, will return next year to take charge of the department of physics.

Mr. C. J. STOWELL was appointed in charge of the department of mathematics at McKendree College, Lebanon, Ill.

Mr. ALFRED DOOLITTLE, instructor of astronomy at the Catholic University of America, Washington, D. C. since 1913, died February 23, 1921. Son of the late Charles Leander Doolittle [*1919*, 178], and a brother of the late Eric Doolittle [*1920*, 438], he was born at Ontario, Ind., June 14, 1867. After receiving his A.B. from Lehigh University in 1887, he was instructor of mathematics and astronomy at Lehigh, 1889–91, assistant in the Nautical Almanac Office, 1892–97, instructor of mathematics and director of the astronomical observatory of The Catholic University of America, 1898–1901, 1906–1913. He was a piece-work computer at the Nautical Almanac Office from 1897 until his death.

Don TOMÁS DE AZCÁRATE, director of the Marine Observatory of San Fernando, Spain, since 1903, died on January 25, 1921, at the age of seventy-one years. He published at least one volume entitled *Anales del Instituto y Observatorio de Marina de San Fernando,* and had charge of the preparation of the *Almanaque Nautico.*

WILHELM JULIUS FÖRSTER, dean of German astronomers, died on January 18, 1921. He was born December 16, 1832. He joined the staff of the Berlin Observatory in 1855, became its director ten years later, and retired in 1904. "He was one of the first two secretaries of the Astronomischer Gesellschaft, and served his country and the scientific world faithfully both there and in many other works. He was an active supporter of the Geodetisches Institut, and in connection both with that and with astronomical conferences he had a world wide circle of friends who will mourn his loss" (*The Observatory*, April, 1921).

MAGNUS NYRÉN, for the forty years 1868–1908 a worker at the Pulkowa Observatory, Russia, died January 16, 1921. Born in Sweden February 21, 1837, his earliest astronomical work was at the Upsala Observatory. He was the author of a large number of important papers (see "Poggendorff"). "After his retirement he lived in Stockholm, and last year published a catalogue of the proper motions of 633 stars in the new Pulkowa fundamental catalogue" (*Observatory*, March, 1921).

GUSTAV WILHELM LUDWIG STRUVE, younger brother of K. H. Struve whose death we have recently recorded (*1920*, 438) died November 4, 1920. Born October 20, 1858, he was astronomer in the Pulkowa Observatory 1880–1894. In 1894 he was made extraordinary professor and in 1897 ordinary professor of astronomy and geodesy at the University of Charcow. His best known work was on the constant of precession, but he took an active part in the Russian triangulation.

OSKAR LESSER, of the Klingeroberrealschule in Frankfurt a.M., Germany, who died September 23, 1920, was born October 4, 1867. He was the author of several books dealing with elementary mathematics through the calculus. For example: *Hilfsbuch für den geometrischen Unterricht an höheren Lehranstalten*, 1902; *Die Infinitesimalrechnung im Unterricht der Prima*, 1906 (second edition, 1911); and *Graphische Darstellungen im Mathematikunterricht der höheren Schulen*, 1908. There were also numerous editions and forms of K. Schwab and O. Lesser's *Mathematisches Unterrichtswerk*, of from one to three volumes each, 1909–1915. The editor of *Zeitschrift für mathematischen und naturwissenschaftlichen Unterricht* has very kindly sent to us proof sheets of a five-page article on Oskar Lesser by G. Wolff. It concludes with a list of 19 titles of his publications.

Professor E. L. MARK, director of the Zoölogical Laboratory at Harvard University, has just retired from active teaching, and been appointed professor emeritus, after forty-four years of service on the staff of the University. In 1871 he received the degree of A.B. from the University of Michigan and taught mathematics there during the next year. He then served for a year as astronomer of the United States Northwest Boundary Survey. In 1873 he went to Europe. Returning in 1877 he became instructor in zoölogy at Harvard University.

At Cornell University Professor VIRGIL SNYDER has been granted leave of absence for the academic year 1921–1922. For the second term of the year he has been awarded, from the Heckscher Foundation for the promotion of research at Cornell University, a grant in support of research in the theory of algebraic surfaces. To Professor H. S. VANDIVER has been awarded a grant from the same Foundation in support of investigations on the theory of algebraic numbers. The Heckscher Foundation was established in 1920 by a gift to Cornell University of five hundred thousand dollars. The donor was August Heckscher, the New

York capitalist, miner, and manufacturer, born at Hamburg, Germany, in 1848. The plan for the administration of the Foundation was published in *Science*, October 15, 1920.

Of the five thousand dollars set aside for distribution in 1921 by the Committee on Grants of the American Association for the Advancement of Science, the following amounts were assigned for work in the fields of mathematics and astronomy: one hundred and fifty dollars to Professor SOLOMON LEFSCHETZ, of the University of Kansas, in support of his work in algebraic geometry; two hundred dollars to Dr. SEBASTIAN ALBRECHT, of Dudley Observatory, Albany, N. Y., in support of his investigation of the variation of wave-length of lines in different types of stellar spectra; and two hundred dollars to Miss CAROLINE E. FURNESS, of Vassar College Observatory, for assistance in the measurement and reduction of photographic plates.

Sir GEORGE GREENHILL was last March elected a corresponding member of the section in mechanics of the Academy of Sciences of the Institute of France (see *1920*, 384; *1921*, 238).

On April 20, 1921, Professor OSWALD VEBLEN was elected for the ensuing year a member of the executive committee of the Division of Physical Sciences of the National Research Council (cf. *1920*, 190).

In April, 1921, Professor G. A. MILLER, of the University of Illinois, was elected a member of the National Academy of Sciences in the Section of Mathematics. The other thirteen members of the Section are: G. D. BIRKHOFF, G. A. BLISS, H. F. BLICHFELDT, OSKAR BOLZA, L. E. DICKSON, EDWARD KASNER, E. H. MOORE, W. F. OSGOOD, W. E. STORY, E. B. VANVLECK, OSWALD VEBLEN, H. S. WHITE, and E. J. WILCZYNSKI. A. R. FORSYTH, DAVID HILBERT, M. E. C. JORDAN, C. F. KLEIN, JOSEPH LARMOR, C. E. PICARD, and VITO VOLTERRA are foreign associates of the Academy. Professor A. E. KENELLY, of Massachusetts Institute of Technology, was also elected a member, in the Section of Engineering.

In April, 1921, G. D. BIRKHOFF, of Harvard University, was elected a member of the American Philosophical Society. Among the members of this Society are the following mathematicians and astronomers: E. W. BROWN, W. W. CAMPBELL, L. E. DICKSON, L. P. EISENHART, H. B. FINE, G. E. HALE, E. O. LOVETT, J. A. MILLER, E. H. MOORE, FRANK MORLEY, F. R. MOULTON, W. F. OSGOOD, H. N. RUSSELL, FRANK SCHLESINGER, T. J. J. SEE, M. B. SNYDER, OSWALD VEBLEN, A. G. WEBSTER, E. B. WILSON, and R. S. WOODWARD. Among the foreign members are JOSEPH LARMOR, C. E. PICARD and VITO VOLTERRA.

Foreigners of the allied nations are now admitted as students in residence (élèves internes) at the Ecole Polytechnique, Paris.

The University of Nebraska offers to graduate students three fellowships in mathematics, of one thousand dollars each, for 1921–22. These fellowships are open to graduates of any good college or university. Appointees will be expected to devote about half their time to teaching.

At the annual meeting in Spokane the last of March the Mathematics Section of the Inland Empire Teachers' Association was reorganized as the Inland Empire Council of Teachers of Mathematics, with the intention of affiliating more closely with the National Council of Teachers of Mathematics. Professor W. C. EELLS of Whitman College, Walla Walla, Washington, was chosen first President of the new organization. The greater part of the meeting was devoted to a discussion of the report, of the National Committee, on College Entrance Requirements in Mathematics. The sentiment of the teachers present was very favorable to the general features of this report.

At the meeting of the Academy of Sciences of the Institute of France held December 27, 1920, a paper by L. E. DICKSON was presented. It was entitled: "Les polynomes égaux à des déterminants." At the meeting of March 14, 1921, the following papers were presented: "La composition des polynomes" by L. E. DICKSON, and "Sur la position des racines des dérivées d'un polynome" by J. L. WALSH.

At recent meetings of the London Mathematical Society the following papers were communicated by title from the chair. On November 11, 1920: "On the conformal transformations of a space of four dimensions" by H. BATEMAN; "Arithmetic of quaternions" by L. E. DICKSON; and "The group of the linear continuum" by N. WIENER. On January 13, 1921: "Determination of all the characteristic sub-groups of an Abelian group" by G. A. MILLER.

At the spring meeting of The Association of Teachers of Mathematics in New England, held in Boston University, May 7, 1921, the following program was given: "Models for teaching geometry" by A. H. WHEELER, North High School, Worcester, Mass.; "Junior high school mathematics" by J. A. FOBERG, Pennsylvania State Department of Education; "Proportional representation" by E. V. HUNTINGTON, Harvard University; "Teaching arithmetic, algebra, and geometry in elementary and secondary schools, together and concretely" by C. W. ELIOT, president emeritus, Harvard University.

Among the papers presented at meetings of the American Philosophical Society, Philadelphia, April 21–23, were the following: "Further investigations on the relation between terrestrial magnetism and atmospheric electricity" by L. A. BAUER; "Discussion of a kinetic theory of gravitation" and "Some new experiments in gravitation" by C. F. BRUSH; "The atomic theory and ideal numbers" by L. E. DICKSON; "Discussion of the application of the method of the interferometer to the measurement of double stars" by J. A. MILLER; "Recent astronomical explorations in space and in time" by F. R. MOULTON; "The Roger Bacon cipher" by W. R. NEWBOLD.

At the annual meeting of the National Academy of Sciences held in Washington, April 25–26, 1921, the following papers were read: "On the problem of three or more bodies" by G. D. BIRKHOFF; "On the approximate solutions in integers of a set of linear equations" by H. F. BLICHFELDT; "Investigations in algebra and number theory" and "Quaternions and their generalizations" by L. E. DICKSON; "A model of the solar gravitational field" by EDWARD KASNER; "On the problem of steering an automobile around a corner," "On the radiation of energy from coils in wireless telegraphy," and "On the vibrations in gun-barrels" by A. G. WEBSTER. Dr. ALBERT EINSTEIN was present at public sessions of the Academy, and responded to an address of welcome presented to him by President Walcott.

At the April meeting of the San Francisco Section of the American Mathematical Society held at Stanford University on Saturday, April 9, the following papers were presented: "Anharmonic polynomial generalizations of the numbers of Bernoulli and Euler," "Note on the prime divisors of the numerators of Bernoulli's numbers," "On a general arithmetical formula of Liouville," "Proof of an arithmetical theorem due to Liouville," and "The Bernoullian functions occurring in the arithmetical applications of elliptic functions" by E. T. BELL; "The approximate solutions in integers of a set of linear equations" by H. F. BLICHFELDT; "Euclid of Alexandria and the bust of Euclid of Megara," and "The spread of Newtonian and Leibnizian notations of the calculus" by F. CAJORI; "Normal ternary continued fractions" by P. H. DAVIS; "Autopolar curves and surfaces" by M. W. HASKELL; "On the computation of interest on certain kinds of investments" by D. N. LEHMER; "The hyperspace generalization of the lines on the cubic surface" by D. V. STEED.

At the sixteenth regular western meeting of the American Mathematical Society, held in Chicago, March 25 and 26, 1921, the following papers were presented: "New properties of all functions" by H. BLUMBERG; "Fallacies and misconceptions in Diophantine analysis" and "A new method in Diophantine analysis" by L. E. DICKSON; "Some new formulæ in combinatory analysis" by A. DRESDEN; "The group of motions of an Einstein space" by J. EIESLAND; "A disputed point regarding the nature of the continuum" by W. B. FORD; "Summable infinite determinants" by W. L. HART; "On a general theory of functions" (preliminary communication) by T. H. HILDEBRANDT; "The general theory of approximation by polynomials and trigonometric sums" by D. JACKSON; "A general theory of congruences" by E. P. LANE; "The equivalence of pairs of Hermitian forms" by MAYME I. LOGSDON; "Invariants and vector covariants of linear algebras without the associative law" by C. C. MACDUFFEE; "An overlooked infinite system of groups of order pq^2, p and q being prime numbers" by G. A. MILLER; "On the expansion of powers of trigonometric functions" and "On the summation of a trigonometric power-series" by I. J. SCHWATT; "Generational definition of linear associative hypernumbers" and "On Hamiltonian products" (second paper) by J. B. SHAW; "On non-loxodromic substitution groups in n dimensions" by E. B. VAN VLECK; "Some projective generalizations of geodesics" by E. J. WILCZYNSKI; "Congruences characterized by certain coincidences" by F. E. WOOD.

At the meeting of the American Mathematical Society in New York City, April 23, 1921, the following papers were presented: "A covariant of three circles" by A. B. COBLE; "Most general composition of polynomials" and "Number of real roots by Descartes' rule of signs" by L. E. DICKSON; "Concerning Laguerre's inversion" and "On certain type of system of ∞^2 curves" by J. DOUGLAS; "The Einstein solar field" by L. P. EISENHART; "The kernel of the Stieltjes integral corresponding to a completely continuous transformation" by C. A. FISCHER; "The mathematical theory of proportional representation" (third paper) by E. V. HUNTINGTON; "Topics in the theory of divergent series" by W. A. HURWITZ; "Note on an irregular expansion problem" by D. JACKSON; "Closed connected point sets which are disconnected by the omission of a finite number of points" by J. R. KLINE; "On the geometry of motion in a curved space of n-dimensions" by J. LIPKA; "Hyperspherical goniometry, with applications to the theory of correlation for n variables" by J. MACMAHON; "On the gyroscope" by W. F. OSGOOD; "On the apportionment of representatives" (second paper) by F. W. OWENS; "On the theorems of Green and Gauss" by

V. C. POOR; "On a simple class of deductive systems" by E. L. POST; "Pressure distribution around a breech-block" by J. E. ROWE; "Higher derivatives of functions of functions," "Method for the summation of a general case of a deranged series" and "The sum of a series as the solution of a differential equation" by I. J. SCHWATT; "On the location of the roots of polynomials" by J. L. WALSH; "Seven points in space and the eighth associated point" by H. S. WHITE; "A special kind of ruled surface" by J. K. WHITTEMORE; "A new vector method in integral equations" by N. WIENER and F. L. HITCHCOCK.

Professor ALBERT EINSTEIN arrived in the United States on April 2. Although he came primarily in the interests of the Zionist movement [*1921*, 191], he has been giving scientific lectures, in German, at various universities. On April 15 he lectured at Columbia University; on April 18, 19, 20, and 21 at the College of the City of New York; on May 3, 4, and 5 at the University of Chicago, and on May 9, 10, 11, 12, and 13 at Princeton University.

Courses in applied mathematics to be offered at the *Massachusetts Institute of Technology* during the year 1921–22 are as follows: Mathematical theory of investment, by Dr. J. S. TAYLOR, Fourier's series, by Dr. NORBERT WIENER, Vector analysis, by Dr. S. D. ZELDIN, Statistical mechanics, by Dr. H. B. PHILLIPS, Aeronautics, by Dr. C. L. E. MOORE, and Applied mathematics to chemistry, by Dr. F. L. HITCHCOCK (cf. *1920*, 242).

Additional courses in mathematics offered at Summer Sessions in 1921 (cf. *1921*, 194, 241) are as follows:

University of Colorado, First Term, June 13–July 20; Second Term, July 21–August 27. A review course in mathematics, by Professor G. H. LIGHT, will be given the first term only. The following courses will be given throughout the quarter: College algebra, by Professor LIGHT; Trigonometry, Plane analytic geometry, and Differential and integral calculus, by Professor G. W. SMITH, of the University of Kansas; Differential equations, by Professor ABRAHAM COHEN, of The Johns Hopkins University. The following term courses will be given either the first or second term: Teachers' course in mathematics, by Professor COHEN; Theory of equations, by Professor LIGHT. One or more of the following term courses will be given by Professors COHEN and LIGHT to meet the demands of the greatest number: Calculus of variations, Definite integrals, Theory of a complex variable, Elliptic integrals and functions, An introductory course in analysis, Differential geometry, and Series. Each course meets five days a week. Five hours credit is given for a course throughout the quarter; two and one-half hours credit for a term course.

University of Wisconsin, June 28–August 5. By Professor C. N. SLICHTER: Mechanics, 5 hours, and Applications of calculus, 3 hours. By Professor E. B. VANVLECK: Survey of algebra and geometry, 5 hours, Analytic geometry, 5 hours, and Theory of integrals including applications to Beta and Gamma functions, 3 hours. By Professor L. W. DOWLING: Plane trigonometry, 5 hours, Projective geometry, 5 hours, and Geometrical aspects of relativity, 3 hours. By Professor WARREN WEAVER: Theory of equations, 5 hours, Differential equations, 5 hours, and Wave theory, 3 hours. By Professor W. W. HART:

Algebra, 5 hours, and Teachers' course, 5 hours. By Mr. J. E. Davis: Differential calculus, 12 hours. By Mr. M. H. Ingraham: Integral calculus, 12 hours. By Mr. Frederick Wood: Elementary analysis, 12 hours.

The Summer Meeting of the Association.

The sixth summer meeting of the Association will be held at Wellesley College, Wellesley, Mass., on Tuesday and Wednesday, September 6–7, 1921. It will immediately precede the meeting of the American Mathematical Society to be held at the same place September 7–9. A joint meeting of the two organizations will be held on Wednesday afternoon, when phases of relativity will be the topic for discussion, and there will be a joint dinner Wednesday evening. Detailed programs of the meeting will be mailed to all members of the Association at a later date. Tower Court will be available for the accommodation of attending members and friends at a rate of three dollars per day for room and meals. A separate wing will be reserved for ladies and married couples. The great hall of Tower Court will furnish an attractive meeting place for those in attendance. Several social functions and perhaps an excursion will be arranged. Lake Waban will be available for boating and bathing. Wellesley is fifteen miles west of Boston on the main line of the Boston and Albany Railroad.

Annals of Mathematics

The following notice appearing in the current issue of the *Annals of Mathematics* is commended to the attention of members of the Association: "According to an agreement between the Mathematical Association of America and the editors of the *Annals of Mathematics,* the Association contributes to the support of the *Annals,* and the *Annals* is supplied to individual members of the Association at one half of the regular price. In consequence of this agreement the volume of the *Annals* was increased by 100 pages which are devoted to expository and historical articles in so far as suitable articles of this class are obtainable. Thus far the editors have not received enough such articles to fill the space available, and therefore wish to call the attention of authors to this lack and to the fact that as long as the shortage continues expository or historical articles of sufficient merit will receive prompt publication.

"A number of the expository articles which have already been published are available in separate form and are listed for sale on the inside of the back cover of this number of the *Annals.* The regular subscription price of the *Annals* is $3.00 a volume."

At present 241 members of the Association are subscribers to the *Annals.*

[*Copy sent to the printer, April 23, 1921; printing delayed by a strike till August 15, 1921.*]